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"Star Wars" cryo tank to start new life with NASA

by Fran Crumb, Information Directorate

ROME, N.Y. — A multi-million-dollar cryogenic chamber, erected as part of Air Force research for President Reagan's Strategic Defense Initiative (SDI) of the 1980s, will be given new life enhancing NASA space science capabilities for the 21st century.

A crane lifted the main, two-story tank from an annex of the Air Force Research Laboratory (AFRL) Information Directorate on June 20. The tank, as well as mounts and controls, are being trucked to NASA's Marshall Space Flight Center in Huntsville, Ala.

Opened in June 1989 as the "Cryogenic Test Facility" at the then Rome Air Development Center, the chamber was built to test prototype space systems and components in pressures and temperatures simulating space environments. The chamber and associated equipment cost approximately \$4 million. It was funded through the Strategic Defense Initiative Office (SDIO), at a time when testing was projected for large optical components of a space-based surveillance system.

Pressure in the chamber can be lowered to near vacuum conditions and the facility was designed to drop temperatures to 100 degrees Kelvin - or 279 degrees below zero on the Fahrenheit scale. It can accommodate test articles up to two meters (six feet) in size.

"The cryo chamber was used for more than just testing objects in extreme cold," said James W. Cusack, an engineer on the program at the time and now chief of the Information Directorate's Information Systems Division. "It also served as an optical test chamber."

"Our original mission was to test optics envisioned for a space-based ballistic missile defense system," said Cusack. "With this chamber, engineers would look down at the mirror being tested from above and conduct experiments with classic optical test equipment. Based on chamber observations, the surface of mirrors could be altered to eliminate minute, atomic-level variations caused by the simulated space environment."

With the demise of SDI space optics work at Rome, the chamber was renamed the Space Simulation Facility and was used sporadically under a 1994 memorandum of understanding with NASA's Goddard Space Flight Center.



STAR WARS — Crane removes cryogenic chamber from the Space Simulation Facility of the Air Force Research Laboratory's Information Directorate at the Griffiss Business & Technology Park.

It will now become the largest vertical cryogenic chamber at NASA's Marshall complex. The move will cost approximately \$300,000 and provide space scientists and engineers with a capability estimated to cost between \$6 million and \$10 million if constructed new. @